

Strategies for Repairing the Universal Service Fund

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Telecommunications carriers and their consumers to pay over \$6.5 billion annually¹ to subsidize service by local exchange carriers operating in high cost areas, and the rates paid by residents in rural areas and Indian reservations, the poor, schools, libraries, rural hospitals, and clinics primarily for basic “lifeline” telephone service.² Despite a substantial sum of money

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¹ Universal Service Contribution Methodology, WC Docket No. 06-122, (FCC adopted June 21, 2006) (report and order and notice of proposed rulemaking), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-94A1.pdf [hereinafter USF Expansion Order]. “There is widespread agreement that the Fund is currently under significant strain. The size of the Fund has grown significantly, with disbursements rising from approximately \$4.4 billion in 2000 to approximately \$6.5 billion in 2005, and is projected to grow even further in the coming years.” *Id.* at 10, ¶ 17. “Outlays from the U[niversal] S[ervice] F[und] grew from \$3.3 billion in fiscal year 1999 to \$5.7 billion in fiscal year 2004.” Congress of the United States, Congressional Budget Office, *Financing Universal Telephone Service* viii (Mar. 2005), available at <http://www.cbo.gov/showdoc.cfm?index=6191&sequence=0>
The Universal Service Administrative Company, which disburses universal service funds, estimates that it will pay out \$7.3 billion in 2006. Universal Service Administrative Company, Universal Service Fund Facts, available at: <http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx>.

² Universal service funding targeted to expand telephone subscription offers financial subsidies to qualifying individuals that defray the non-recurring cost to initiate service and the recurring costs for dial up telephone service. The services that are supported by the federal universal service support mechanisms are: (1) voice grade access to the public switched network; (2) local usage; (3) Dual Tone Multifrequency (DTMF) signaling or its functional equivalent for “touch tone” dialing; (4) single-party service or its functional equivalent; (5) access to emergency services, including 911 and enhanced 911; (6) access to operator services; (7) access to interexchange services; (8) access to directory assistance; and (9) toll limitation for qualifying

available for universal service funding (“USF”), longstanding goals remain unachieved and the current system has no funds allocated to bridge the Digital Divide³ by supporting access to broadband networks by individuals.

Much of the inefficiency and ineffectuality in USF stems from defects in design primarily caused by the need to accommodate many different constituencies including politicians and the companies providing telephone service. For most of the 20th century, AT&T supported its national domination of local and long distance telephone service markets by erecting a private universal service subsidy in ways that financially benefited both the company and unaffiliated

low-income customers. Federal-State Joint Board on Universal Service, (Mar. 3, 2004), 19 F.C.C.R. 4257, 4264 (recommended decision). The FCC has declined to increase the scope of services qualifying for USF subsidies. *See* Federal-State Joint Board on Universal Serv., (July 15, 2002), 17 F.C.C.R. 14,095 (recommended decision), . However, the Commission does not limit subsidies to only one telephone line per household, despite the recommendation by a Federal State joint Board that it do so: W]e do not adopt the recommendation of the Joint Board to limit high-cost support to a single connection that provides access to the public telephone network. Section 634 of the 2005 Consolidated Appropriations Act prohibits the Commission from utilizing appropriated funds to modify, amend, or change” its rules or regulations to implement this recommendation. Federal-State Joint Board On Universal Serv., (Mar. 17, 2005), 20 F.C.C.R. 6371 (report and order) (citing Consolidated Appropriations Act, 2005, Pub. L. No. 108-447, § 634, 118 Stat. 2809 (2005)).

³ The Digital Divide separates “those [people] with access to new technologies and those without.” Department of Commerce, National Telecommunications and Information Administration, *Falling Through the Net: Defining the Digital Divide* xii (July 1999), available at <http://www.ntia.doc.gov/ntiahome/fttn99/fttn.pdf>; *see also* Digital Divide Network, <http://www.digitaldivide.net> (last visited date); Jaime Klima, *The E-Government Act: Promoting E-Quality or Exaggerating the Digital Divide*, 2003 DUKE L. & TECH. REV. 9 (Apr. 15, 2003); James E. Priege, *The Supply Side of the Digital Divide: Is There Equal Availability in the Broadband Internet Access Market?* 41 ECON. INQUIRY 346 (2003); Peter K. Yu, *Bridging the Digital Divide: Equality in the Information Age*, 20 CARDOZO ARTS & ENT. L.J. 1 (2002); Organization for Economic Cooperation and Development, *Understanding the Digital Divide* (2001), <http://www.oecd.org/dataoecd/38/57/1888451.pdf>.

local telephone carriers whose political support AT&T needed.⁴ AT&T intentionally overpriced long distance telephone service and transferred a portion of the profits to rural local telephone companies carriers. The Federal Communications Commission (“FCC”) endorsed this subsidy from long distance callers to local service subscribers, despite the lack of calibration. Excessive long distance rates stifled demand and burdened some consumers even as many local service subscribers got bargain rates for a service they could afford to pay at a fully compensatory rate. State and federal telecommunications regulators also benefited by showcasing extraordinarily cheap local calling rates.⁵

⁴ “Universal service was seen by [AT&T President Theodore] Vail as the delivery of all telephone through one ‘system’ guided by one ‘policy.’ Obviously he saw universal service as requiring a nationally integrated single system, managed by AT&T.” ROBERT W. CRANDALL & LEONARD WAVERMAN, WHO PAYS FOR UNIVERSAL SERVICE?: WHEN TELEPHONE SUBSIDIES BECOME TRANSPARENT 6 (2000), available at: <http://brookings.nap.edu/books/0815716117/html/index.html>.

“[T]o Vail, universal service was not merely a social goal but instead a sound corporate strategy for eliminating competition and establishing ubiquitous interconnection for the Bell System.” Patricia M. Worthy, *Racial Minorities and the Quest to Narrow the Digital Divide: Redefining the Concept of ‘Universal Service*, 26 HASTINGS COMM. & ENT. L.J. 1, 7-8 (2003); see also MILTON L. MUELLER, JR., *UNIVERSAL SERVICE: COMPETITION, INTERCONNECTION, AND MONOPOLY IN THE MAKING OF THE AMERICAN TELEPHONE SYSTEM* (MIT Press 1997).

⁵ “First, the jurisdictional separations process--by which the total costs of the telephone enterprise were split between the state and federal jurisdiction--for years allocated a higher portion of costs to interstate long distance services than could be supported under pure cost-causation principles. Originally, a subscriber plant factor (‘SPF’) was designed to allocate more of the costs of the common outside telephone plant (the wires from the central switching offices to customer locations) to the interstate jurisdiction than could be justified by a strictly usage-based cost allocation. The arbitrary SPF factor was later changed to a lower, yet still somewhat arbitrary, gross allocator of 25%. Similarly, with respect to switching costs, the strictly usage-based dial equipment minutes (‘DEM’) factor was weighted to send more costs to the interstate jurisdiction. The net result of these and other cost separation factors was to shift costs to the interstate jurisdiction, and hence long distance services, thereby reducing the cost and the corresponding revenue requirement that had to be covered by intrastate services in general and local services in particular.” William R. Drexel, *Telecom Public Policy Schizophrenia: Schumpeterian Destruction Versus Managed Competition*, 9 VA. J.L. & TECH. 5, 16 (Spring, 2004).

The subsidies available from dial up telephone services ⁶ will diminish dramatically as consumers exploit technological innovations such as Voice over the Internet Protocol (“VoIP”)⁷ that can qualify for a regulatory classification that eliminates or reduces the USF subsidy burden. ⁸ USF avoidance, coupled with an increasing financial burden on non-VoIP users, renders the existing regime unsustainable.

This paper examines the flaws, defects, and political accommodations that exist in the current universal service funding process with an eye toward proposing a new workable system that can support broadband infrastructure development and operate in a digital environment where few carriers may offer traditional telecommunications services on a stand alone basis.⁹

⁶ “Telecommunications companies must pay a percentage of their interstate end-user revenues to the Universal Service Fund. This percentage is called the contribution factor. The contribution factor changes four times a year (quarterly) and is increased or decreased depending on the needs of the Universal Service programs.” Federal Communications Commission, *Contribution Factors & Quarterly Filings*, available at http://www.fcc.gov/wcb/universal_service/quarter.html (last visited date).

⁷ For technical background on how VoIP works see Intel White Papers, *IP Telephony Basics*, available at http://www.intel.com/network/csp/resources/white_papers/4070web.htm (last visited date); Susan Spradley & Alan Stoddard, *Tutorial on Technical Challenges Associated with the Evolution to VoIP*, Power Point Presentation, http://www.fcc.gov/oet/tutorial/9-22-03_voip-final_slides_only.ppt.

⁸ The FCC exempts information service providers from making USF contributions. “All telephone companies that provide service between states and internationally, including wireless companies, must contribute a percentage of their revenues derived from these services to the USF. Some states impose similar requirements for revenues derived from intrastate services.” Federal Communications Commission, Consumer & Governmental Affairs Bureau, *Understanding Your Telephone Bill*, available at <http://www.fcc.gov/cgb/consumerfacts/understanding.html>.

⁹ Changed circumstances require a renewed examination of universal service funding, despite a long history of academic scrutiny. See Krishna P. Jayakar and Harmeet Sawhney, *Universal service: beyond established practice to possibility space*, 28 TELECOM. POL’Y 339-57 (2004).

The paper proposes a system that spreads the financial burden among all operators that offer services originating and/or terminating over networks accessible to and from telephone handsets. The paper suggests that governments adopt best practices for stimulating innovation, infrastructure development, and increased penetration of both basic and advanced telecommunications services. This paper concludes with an identification of the compromises and tradeoffs that the FCC, and possibly Congress, must impose upon incumbent universal service beneficiaries, such as local exchange carriers and users.

I. The Universal Service Mission in the United States

Since the onset of telephony companies and governments have endorsed strategies for making service affordable and available even for the poor and people located in remote and costly to serve areas. Supporting universal service constitutes sound public policy, because efficient, effective, and widely available telecommunications services can stimulate social and economic development by providing the vehicle for greater commerce, political discourse, education, and delivery of government services such as job training.¹⁰ However, the means by which the United States has pursued USF combines lofty concepts of equity and equal opportunities with other objectives. For example, in the early 1900s, senior management of AT&T recognized that promoting universal service, using an internally generated financial

¹⁰ Robert W. Hahn, Scott Wallsten, Robert W. Crandall, & Robert E. Litan, American Enterprise Institute for Public Policy Research, *Bandwidth for the People* (Oct. 2004), available at: http://www.aei.org/publications/pubID.21593,filter.all/pub_detail.asp (citing Robert W. Crandall & Charles L. Jackson, *The \$500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access* (2001)). Broadband Internet access could contribute substantially to economic growth. Consumers benefit from new ways to acquire information, enjoy audio and video entertainment, monitor remote locations, receive medical care, and buy items ranging from books to cars. A study in 2001 estimated that universal broadband adoption could yield annual consumer benefits of \$300 billion. *Id.*

subsidy methodology, achieved the twin goals of promoting aspects of universal service and accruing support for maintaining “benevolent” Bell System market domination from politicians and rural, unaffiliated telephone companies.¹¹

Until the passage of the Telecommunications Act of 1996 Act,¹² telecommunications service consumers bore a universal service subsidy obligation without knowing the cost, because carriers could hide the expense primarily in higher per minute long distance telephone charges and average higher costs over a large volume of calls.¹³ Use of an implicit subsidy mechanism obscured the cost of the universal service mission and made it difficult to discern whether subsidy burdens blunted demand and caused other market distortions. Consumers could not

¹¹ When AT&T President Theodore Vail articulated universal service, he sought “the unification of telephone service under regulated local exchange monopolies.” MILTON L. MUELLER, JR., *UNIVERSAL SERVICE: COMPETITION, INTERCONNECTION, AND MONOPOLY IN THE MAKING OF THE AMERICAN TELEPHONE SYSTEM* 92 (MIT Press 1997).

¹² Telecommunications Act of 1996, Pub. L.No. 104-104, 110 Stat. 56 (1996) (codified in scattered sections of 47 U.S.C.) [hereinafter cited as ‘96 Act].

¹³ “By longstanding tradition, local phone companies are required to sell their services to customers at roughly comparable prices. This so-called ‘universal service’ obligation is intended to ensure that people who live in rural and residential areas (which are expensive to serve) can buy phone service on terms similar to those offered to urban or business customers (which are cheaper to serve). Under universal service obligations, then, retail pricing is typically averaged across a variety of customers or geographic areas.” Stuart Buck, *Telric vs. Universal Service: A Takings Violation?*, 56 FED. COMM. L.J. 1, 2 (2003). Implicit subsidies in telecommunications “result, in large part from rate averaging between rural and suburban/urban areas and the recovery of certain non-traffic sensitive costs through traffic sensitive per minute rates, which over-recovers costs from higher volume users, often business customers.” Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, CC Docket No. 01-338, 18 F.C.C.R. 16,978, 17,078 n.509 (2003); *see generally* Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Low-Volume Long Distance Users, Federal-State Joint Board On Universal Service, 15 F.C.C.R. 12,962, 12,971-72 (2002) (CALLS Order) (describing how high-volume users bear a greater share of the non-traffic sensitive costs than low-volume users), *aff’d in part, rev’d in part, and remanded in part sub nom. Tex. Office of Pub. Util. Counsel v. Fed. Communications Comm’n*, 265 F.3d 313 (5th Cir. 2001). *See also*, Jonathan Weinberg, *The Internet and “Telecommunications Services,” Universal Service Mechanisms, Access Charges, and Other Flotsam of the Regulatory System*, 16 YALE J. on REG., 211 (1999).

readily determine the scope of their subsidy contribution, because carriers did not subdivide their single per minute rates into separate elements, including a surcharge for universal service.¹⁴

The '96 Act requires explicit subsidies,¹⁵ codifies the universal service mission,¹⁶ and establishes specific requirements for the FCC to implement, including near parity in cost and access to service by rural consumers.¹⁷ Most carriers have responded to the explicit subsidy requirement by creating a separate billing line item to identify and pass through the specific cost

¹⁴ Prior to enactment of the Telecommunications Act of 1996 telephone companies did not impose a billing line item that identified the amount due from consumers to support USF.

¹⁵ “There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.” 47 U.S.C. § 254(b)(5) (2006).

¹⁶ *Id.* § 254(b)(1)-(4). The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles: (1) Quality and rates: Quality services should be available at just, reasonable, and affordable rates. (2) Access to advanced services: Access to advanced telecommunications and information services should be provided in all regions of the Nation. (3) Access in rural and high cost areas: Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas. (4) Equitable and nondiscriminatory contributions: All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service. *Id.*

¹⁷ “In section 254(g) of the Act, Congress codified the Commission's pre-existing geographic rate averaging and rate integration policies. The Commission implemented section 254(g) by adopting two requirements. First, providers of interexchange telecommunications services are required to charge rates in rural and high-cost areas that are no higher than the rates they charge in urban areas. This is known as the geographic rate averaging rule. Second, providers of interexchange telecommunications services are required to charge rates in each state that are no higher than in any other state. This is known as the rate integration rule.” Second Report and Order and Further Notice of Proposed Rulemaking in CC Docket No. 00-256, Fifteenth Report and Order in CC Docket No. 96-45, and Report and Order in CC Docket Nos. 98-77 and 98-166, 16 F.C.C.R. 19,613, 19689- 19690 (2001).

of universal service support.¹⁸ For the third quarter of 2006, the “contribution factor” surcharge that was passed directly to consumers amounted to 10.5 % of a telecommunications carrier’s interstate and international end-user service revenues,¹⁹ a rate that added several dollars per month to the average consumer’s bill.

A. Four Types of Universal Service Promotions

The universal service mission in the United States traditionally has meant that carriers have a duty to ensure that the largest possible number of residents have access to basic telephone service, including the poor and residents in remote locations.²⁰ Universal service funding supports four programs:

- 1) **The Low Income Program** reimburses local wireline and some wireless telephone companies for providing service discounts to qualifying low-income consumers.²¹ The LinkUp America program offsets one-half of the initial hook-up fee,

¹⁸ “Some consumers may notice a “Universal Service” line item on their telephone bills. This line item appears when a company chooses to recover its contributions directly from its customers by billing them this charge. The FCC does not require companies to pass on these costs to their customers.” Federal Communications Commission, Consumer and Governmental Affairs Bureau, <http://www.fcc.gov/cgb/consumerfacts/universalservice.html> (last visited Aug. 26, 2006).

¹⁹ See Federal Communications Commission, Universal Service, *Contribution Factors & Quarterly Filings*, available at http://www.fcc.gov/wcb/universal_service/quarter.html (last visited date).

²⁰ “The notion that everyone should be provided the opportunity to receive basic telephone service at an affordable rate, regardless of geographic location or economic status, has been widely adopted as national policy. The goal of quality, widely available and reasonably priced telephone service has been achieved through a myriad of regulatory policies such as rate averaging, cost support funds and loan programs.” Patricia M. Worthy, *Racial Minorities and the Quest to Narrow the Digital Divide: Redefining the Concept of “Universal Service*, 26 HASTINGS COMM. & ENT. L.J. 1, 4 (2003).

²¹ Federal Communications Commission, Lifeline and Link-Up: Affordable Telephone Service for Income-Eligible Consumers; available at <http://www.fcc.gov/cgb/consumerfacts/lowincome.html>. For states that rely solely on the federal

up to \$30.00. The program also encourages carriers to offer a deferred payment schedule for the initial installation fee. The Lifeline Assistance Program provides a discount of up to \$10.00 per month for basic telephone service. Residents of American Indian and Alaska Native tribal communities may qualify for up to an additional \$25.00 in support beyond current Lifeline support levels and expanded LinkUp support of up to \$70.00 in additional support beyond current levels. In 2005, this program provided \$806 million in support.²²

2) **The High-Cost Program** provides financial support to local wireline and some wireless telephone companies that offer telecommunications services in areas where the cost of providing service exceeds a national or state average by at least 115 to 135% depending on the type of cost elements supported. Carriers operating in high cost areas are divided into rural and non-rural locales and have several different cost components assessed for purposes of determining whether subsidization should occur. The FCC primarily examines the costs local exchange carriers incur in providing subscribers with access to telecommunications services via a “local loop” connection. This first mile connection for originating calls and the last mile link for receiving calls, requires substantial sunk investment and also reflects economies of scale. Subsidies typically flow to telephone companies serving fewer than 50,000 telephone lines. Small carriers usually have higher per subscriber costs that cannot be recouped fully from the access charge fees imposed on long distance carriers for originating and terminating long distance traffic and from telephone subscribers who now pay a monthly \$6.50 subscriber line charge. In 2005, this program provided \$3.824 billion in support.²³

Lifeline and Link-Up program eligibility criteria, subscribers must either have an income that is at or below 135% of the federal Poverty Guidelines, or participate in one of the following assistance programs: Medicaid, Food Stamps, Supplemental Security Income (SSI), Federal Public Housing Assistance (Section 8), Low-Income Home Energy Assistance Program (LIHEAP), Temporary Assistance to Needy Families, or The National School Lunch Program’s Free Lunch Program.*Id.*

²² Universal Service Administrative Co., 2005 Annual Report 42; *available at* <http://www.universalservice.org/res/documents/about/pdf/annual-report-2005.pdf> [hereinafter USAC 2005 Annual Report].

²³ *Id.* at 41.

3) **The Schools and Libraries “e-rate” Program**²⁴ provides discounts of twenty to ninety percent, depending on the household income level of families in the community and whether the school or library is located in an urban or rural area. The discounts offset the cost of voice, data, video and wireless services, Internet access, and the cost of installing and maintaining internal connections including switches, hubs, routers, and wiring. A maximum of \$2.25 billion is available annually and \$1.862 billion was awarded in 2005.²⁵

4) **The Rural Health Care Program** ensures that health care providers located in rural areas pay no more than their urban counterparts for telecommunications services including those “telemedicine” services needed to access advanced diagnostic and other medical services available at urban medical centers. In 2005, this program awarded \$39.7 million.²⁶

B. Macro-Level Problems with the Current System

The USF regime in the United States suffers from systemic design problems that have a significant adverse impact on consumers and the carriers providing service.

1) Marketplace Distortion

At the macro-level, the current USF system distorts the local and long-distance telephone

²⁴ Schools and Libraries Universal Service Support Mechanism, (Aug. 13, 2005), 19 F.C.C.R. 15,808 (fifth report and order), *petition for reconsideration pending*. Under the Commission's rules, eligible schools and libraries may receive discounts ranging from 20 percent to 90 percent of the pre-discount price of eligible services, based on indicators of need. Schools and libraries in areas with higher percentages of students eligible for free or reduced-price lunch through the National School Lunch Program (or a federally approved alternative mechanism) qualify for higher discounts for eligible services than applicants with low levels of eligibility for such programs. Schools and libraries located in rural areas also generally receive greater discounts. The Commission's priority rules provide that requests for telecommunications services, voice mail and Internet access for all discount categories shall receive first priority for the available funding (Priority One services). The remaining funds are allocated to requests for support for internal connections (Priority Two services), beginning with the most economically disadvantaged schools and libraries, as determined by the schools and libraries discount matrix. *Id.* at 15810 (footnotes omitted).

²⁵ USAC 2005 Annual Report, at 44.

²⁶ *Id.* at 46.

service marketplace by creating artificial pricing signals.²⁷ Now that the law requires the FCC to establish a transparent subsidy process, experts and even ordinary consumers have a better sense of how much the USF regime costs. Many consumers resent what they perceive as a tax, despite FCC mandated language in bills disputing this perception.²⁸ The fact that just about every carrier passes on the USF burden as a separate billing line item makes this charge appear no differently than another line item that does pass through an actual tax.

Telephone companies render bills that rival the number of additional taxes, fees, and surcharges imposed by car rental companies and airlines, some ventures have recognized that they can accrue a substantial cost of business discount by configuring telephone services that avoid triggering USF and other regulatory burdens.²⁹ Savvy consumers also have adopted similar self-help strategies. Carrier and consumer tactics used to save money by avoiding USF burdens primarily rely on inconsistent and asymmetrical regulatory treatment of functionally equivalent services. For example, the FCC exempts information services from USF contribution requirements even though some of these services, such as DSL and cable modem service, provide the broadband, bit transmission service needed to access VoIP services that directly

²⁷ “Because fees or taxes imposed on the consumption of a service alter prices that consumers face, they distort consumers’ choices: consumers will allocate their spending differently than they would have in the absence of a tax.” CBO Paper, *supra* note 1, at 19.

²⁸ The FCC’s Truth in Billing policies state, *inter alia*, “that it is misleading to represent discretionary line item charges in any manner that suggests such line items are taxes or charges required by the government.” Truth-In-Billing And Billing Format, National Association of State Utility Consumer Advocates’ Petition for Declaratory Ruling Regarding Truth-in-Billing, (Mar. 18, 2005), 20 F.C.C.R. 6448, ¶ 1. Additionally, “the amount of a carrier’s federal universal service line item will not exceed the relevant interstate telecommunications portion of the bill times the relevant contribution factor.” Federal-State Joint Board on Universal Serv., (Dec. 13, 2002), 17 F.C.C.R. 24,952, 24,978 (report and order).

²⁹ VoIP service providers, such as Vonage, can offer a flat rated unmetered service, in part due to the USF exemption.

compete with telecommunications services providers who must contribute.³⁰ The FCC intends on requiring VoIP service providers to contribute to USF, but while this inclusion will help shore up funding, it expands the distortion to the long distance telephone service marketplace by raising the cost of service to more consumers.

2) Poor Calibration of Benefits and Burdens

The current regime offers a poorly calibrated mechanism to implement the principal goal of USF, which is to improve telephone subscriptions and line penetration, commonly referred to as teledensity. USF provides financial benefits to some consumers who are entirely capable of paying the full cost of the telecommunication services they use³¹ through subsidies for which the consumers' carrier qualifies. In this scenario, wealthy landowners in exclusive rural enclaves pay a fraction of what they could afford to pay, and what they would have paid had the USF system not rewarded them for residing in a high cost telephone service area. Other beneficiaries have an opportunity to acquire basic telephone services for a price well below what they might willingly pay. Additionally, the USF system does not exclude from subsidization costs incurred

³⁰ See Allen S. Hammond, IV, *Universal Service: Problems, Solutions, and Responsive Policies*, 57 FED. COMM. L.J. 187 (2005); David B. Bender, *Everything That Rises Must Converge: The Case For IP Telephony Regulation After Vonage v. Minnesota Public Utilities Commission*, 36 RUTGERS L.J. 607 (2005); Sunny Lu, *Cellco P'ship v. FCC & Vonage Holdings Corp. v. Minnesota Pub. Utils. Comm'n: VoIP's Shifting Legal and Political Landscape*, 20 BERKELEY TECH. L.J. 859 (2005); Joseph Gratz, *Voice Over Internet Protocol*, 6 MINN. J.L. SCI. & TECH. 443 (2004); J. Scott Marcus, *Evolving Core Capabilities of the Internet*, 3 J. TELECOMM. & HIGH TECH. L. 121 (2004); Chérie R. Kiser and Angela F. Collins, *Regulation on the Horizon: Are Regulators Poised to Address the Status of IP Telephony?*, 11 COMM. LAW CONCEPTS 19 (2003); Robert M. Frieden, *Dialing for Dollars: Should the FCC Regulate Internet Telephony?*, 23 RUTGERS COMPUTER & TECH. L.J. 47 (1997).

³¹ Because the subsidy for operating in a high cost area flows to the carrier providing service, all subscribers regardless of income, located in the high cost area accrue a financial benefit through lower rates. Wealthy owners of vacation homes in rural locales surely can afford to pay the full cost of their telephone service.

by a carrier, located in a high cost area, in providing multiple lines to a single residence. Furthermore, nothing prevents even a low-income subscriber to subsidized wireline service from also paying full retail rates for an additional wireless subscription.

On the other hand, the USF regime imposes contribution obligations on consumers, including the working poor and others not well equipped to absorb an increasing financial burden. The current 10.5% surcharge paid by all dial-up long distance telephone users places a comparatively higher burden on heavy users, which might include individuals with incomes just above the subsidy qualifying level. For some telephone subscribers in remote areas, a disproportionate number of calls triggers a toll charge and a USF contribution.³² Ironically, a cellular radiotelephone might offer cheaper service for these subscribers, with VoIP offering an even greater discount.

3) Inflexibility

Additionally, relatively generous basic service subsidies do not make funds available for targeting non-subscribers who would qualify for subsidized service, but who have not subscribed. There has been little empirical research examining why people do not subscribe to basic telephone services and what strategies might create incentives for people to subscribe. Perhaps qualifying, but non-participating individuals, might prefer a telecommunications option other than basic dial-up voice service. With greater flexibility, a USF system might offer these non-users the option of applying the amount of the wireline voice service discount to a wireless, or high-speed data connection.

³² Telephone subscribers in remote areas may have the opportunity to make some toll free, local calls to other subscribers in the immediate area. However, calls outside this immediate vicinity would trigger a toll charge.

4) Explicitness in the Burden Triggers Avoidance Strategies

Striking evidence of the amount of USF support paid monthly has created a type of “compassion fatigue” with a growing incentive, especially for heavy interstate long distance telephone callers, to pursue self-help options that reduce or eliminate their contributions. Through clever, but not always legal strategies, carriers can eliminate their USF support burdens by devising services that offer long distance calling capability, but which qualify for regulatory classification other than telecommunications service. AT&T has offered attractive rates for pre-paid calling cards by assuming that inserting recorded information during the call setup process converts the call into an information service. The FCC has rejected this interpretation,³³ but refrained from declaring all calling card operators subject to USF liability. Instead, the Commission initiated a Rulemaking and concluded that calling card long distance service providers offer telecommunications service and accordingly must contribute to universal service funding.³⁴

5) USF Primarily Supports Narrowband, Dial Up Service

The emphasis on promoting basic service line penetration has a negative effect on broadband market penetration. Except for schools, libraries, and rural medical facilities, current USF funding does not support access to advanced services. The combination of low dial-up telephone rates, comparatively high broadband rates, and no USF program outside of three select

³³ See AT&T Corp. Petition For Declaratory Ruling Regarding Enhanced Prepaid Calling Card Services; Regulation Of Prepaid Calling Card Services, (Feb. 23, 2005), 20 F.C.C.R. 4826 (order and notice of proposed rulemaking) (finding AT&T responsible for USF contributions from revenues derived from calling cards containing prerecorded information).

³⁴ Regulation of Prepaid Calling Card Services, WC Docket No. 05-68, (FCC released June 30, 2006) (declaratory ruling and report and order), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-79A1.doc.

constituencies, largely explains why the United States globally ranks between twelfth and sixteenth in broadband penetration.³⁵ Despite progress in broadband market penetration, not all United States carriers offer inexpensive Internet access when compared globally, or against the best practices of carriers operating in robustly competitive markets.³⁶ Growing competition, particularly in urban areas, may trigger significant downward pressure on broadband rates. However, concerns about an urban/rural Digital Divide remain credible where inter-modal competition does not exist. For example, most DSL services cannot extend beyond 15,000 feet from a telephone company switching facility,³⁷ thereby limiting the DSL option in many suburban, exurban and rural locales.

C. Micro-Level Problems With the Current System

In addition to macro-level design problems with USF in the United States, a number of specific, micro-level issues exacerbate the situation.

³⁵ The International Telecommunication Union reported that as of January 1, 2005, the United States ranked sixteenth in broadband penetration measured in terms of number of subscribers per 100 inhabitants. See International Telecommunications Union, ITU Strategy and Policy Unit Newsblog, available at: <http://www.itu.int/osg/spu/newslog/ITUs+New+Broadband+Statistics+For+1+January+2005.aspx>. The Organization for Economic Co-Operation and Development estimates that the U.S. ranks twelfth as of December 1, 2005. See *OECD Broadband Statistics*, available at http://www.oecd.org/document/39/0,2340,en_2825_495656_36459431_1_1_1_1,00.html.

³⁶ See Organization for Economic Co-Operation and Development, Directorate for Science, Technology and Industry, Committee for Information, Computer and Communications Policy, Working Party on Telecommunications and Information Services Policies, *Benchmarking Broadband Prices in the OECD* (June 18, 2004), available at <http://www.oecd.org/dataoecd/58/17/32143101.pdf>.

³⁷ See Curt Franklin, *How DSL Works*, available at: <http://computer.howstuffworks.com/dsl.htm>.

1) The Status Quo Serves the Interests of Several Powerful Constituencies

At the micro-level, the current USF system creates several constituencies keen on maintaining the status quo regardless of its efficacy and efficiency. Elected officials, particularly ones representing remote and rural states, perceive a benefit in helping to maintain below-cost telephone service for some constituents.³⁸ The Universal Service Administrative Company (“USAC”)³⁹ has every incentive to make itself indispensable even though its primary duty lies in the seemingly straightforward task of collecting and dispensing USF funds.⁴⁰ A cottage industry

³⁸ “While the universal service issue has yet to achieve as high a profile as other aspects of the debate on overhauling the nation's telecommunications laws, it is nonetheless a major driver of that debate. The reason: Two major Senate players, Commerce Chairman Ted Stevens, R-Alaska, and Commerce ranking member Daniel Inouye, D-Hawaii, represent largely rural states heavily dependent on the universal service fund.” National Journal’s Insider Update, The Universal Service Issue: Recent Stories; available at: <http://www.njtelecomupdate.com/tb-IVYH1134157615028.html>.

³⁹ USAC administers the schools and libraries universal service support program under Commission oversight. Under this program, eligible schools, libraries, and consortia that include eligible schools and libraries, may receive discounts for eligible telecommunications services, voice mail, Internet access, and internal connections. Prior to applying for discounted services, an applicant must conduct a technology assessment and develop a technology plan to ensure that any services it purchases will be used effectively. The applicant then must submit to the Administrator a completed FCC Form 470, in which the applicant sets forth, among other things, the services for which it seeks discounts. Once the school or library has complied with the Commission's competitive bidding requirements and entered into agreements for eligible services, it must file an FCC Form 471 application to notify the Administrator of the services that have been ordered, the service providers with whom the applicant has entered into an agreement, and an estimate of funds needed to cover the discounts to be given for eligible services. Schools and Libraries Universal Service Support Mechanism, (Aug. 13, 2004), 19 F.C.C.R. 15,808, 15,809 (fifth report and order), *petition for reconsideration pending*.

⁴⁰ For insight on the procedural complexity of the USAC e-rate funding process, see John Noram, *E-rate for Beginners*, Power point presentation (Sept. 27-29, 2004), available at: <http://www.sl.universalservice.org/data/ppt/2004/01%20E-rate%20for%20Beginners.ppt>; see also Michigan Department of Education, E-Rate Application Flow Chart, available at: http://www.michigan.gov/documents/flowchart_61108_7.doc.

of USF consultants has developed to help school districts and libraries maneuver the USAC labyrinth of technology plans, forms, and reports for securing e-rate funding.⁴¹ Perhaps all too predictably, criminals have devised ways to defraud USAC,⁴² causing the FCC belatedly to increase audits⁴³ and to consider additional types of scrutiny.⁴⁴

Because the current USF regime involves discounted recurring services and subsidies based on carrier calculated costs, achieving the universal service mission cannot occur. The USF process does not have a targeted end point at which the FCC can declare partial victory and establish a glide path for reducing subsidies. Apparently, the USF mechanism will operate in perpetuity, using monthly contributions from telecommunications subscribers primarily to wireline local exchange carriers who in turn discount their retail rates for select groups.⁴⁵

⁴¹ See, e.g., eRate Solutions, LLC, <http://www.eratesolutions.com/about.shtml> (last visited date).

⁴² Federal Communications Commission, Office of Inspector General, Semiannual Report (Oct. 31, 2002), available at: <http://www.fcc.gov/oig/sar902.pdf>; see also Bob Williams, The Center for Public Integrity, *Phone Fund for Schools, Libraries Riddled with Fraud* (Jan. 9, 2003), available at: <http://www.public-i.org/telecom/report.aspx?aid=99&sid=200>.

⁴³ Federal Communications Commission, Office of the Inspector General, Universal Service Fund; available at <http://www.fcc.gov/oig/oigaudpm-usf.html>. Oversight of the Schools and Libraries Program has increased because of complaints the OIG has received alleging improprieties within the program. The alleged improprieties include the submission of false claims, failure to comply with appropriate procurement regulations and laws, conflict of interest, forgery and securities related offenses. In order to maintain program integrity, the OIG is working with local and federal law enforcement entities to investigate the complaints and follow-up with prosecution were appropriate. Furthermore, the OIG has developed the USF Strategic Audit Plan to provide overall goals and implementation strategies for oversight of this program. *Id.*

⁴⁴ Comprehensive Review of Universal Service Fund Management, Administration, and Oversight, (June 14, 2005), 20 F.C.C.R. 11,308 (notice of proposed rulemaking) [hereinafter USF Management Assessment].

⁴⁵ According to the FCC USF should not favor a specific technology or service provider: “Pursuant to section 254(b)(7)[of the Communications Act, as amended, 47 U.S.C. § 254(b)(7)]

Similarly, the system compensates carriers year in and year out based on the assumption that once a carrier operates in a high cost area it probably always will, despite the fact that demographic changes might render a portion of an otherwise high cost area, more densely populated, or occupied primarily by wealthy individuals.

2) Accepts Costs With Few Auditing Safeguards

The USF system largely accepts as a given whatever costs carriers report regardless of whether carriers could operate more efficiently and whether new technologies might offer lower costs, possibly without significant recurring operational costs. This means that neither the USAC nor the FCC does much by way of examining whether a carrier might more cheaply serve USF beneficiaries and, more broadly, whether USF has achieved progress in reaching goals.⁴⁶ Even though new technological options, such as fixed and mobile wireless services, might offer a better value proposition, the USF regime does not require competitive bidding among prospective service providers for the opportunity to receive subsidies to serve a high cost area.⁴⁷

and consistent with the Joint Board's recommendation, we establish 'competitive neutrality' as an additional principle upon which we base policies for the preservation and advancement of universal service." Federal-State Joint Board On Universal Service, CC Docket No. 96-45, Report and Order, 12 FCC Rcd. 8776, 8801 (1997). "In this context, competitive neutrality means that universal service support mechanisms and rules neither unfairly advantage nor disadvantage one provider over another, and neither unfairly favor nor disfavor one technology over another." *Id.*

⁴⁶ Despite eight years of operation, neither the FCC nor the USAC has established clearly articulated goals and a process for compiling reliable performance data. "The Commission is in the process of compiling USF performance measures, particularly for the Schools and Libraries program and the High Cost program, in order to comply with the Office of Management and Budget ('OMB') Program Assessment Rating Tool ('PART') requirements." *Id.* ¶ 24. The FCC only recently solicited "comment on suitable outcome, output, and efficiency measures for the E-rate program." *Id.* ¶ 25.

⁴⁷ Section 214 of the Communications Act of 1934, as amended, authorizes state utility commissions to use a public interest test for determining which carriers shall qualify to receive USF funding. 27 U.S.C. §214(e). State commission can authorize more than one Eligible

3) System Prone to Abuse

The current USF regime creates opportunities for fraud⁴⁸ and provides incentives for carriers and e-rate beneficiaries to ignore technological innovations that would reduce their dependency, or qualifications for subsidies.⁴⁹ Arguably, a rural, high cost telephone company could replace its expensive, high maintenance copper wire network with a cheaper and more accessible wireless or VoIP alternative. Despite high initial sunk costs for such a network, much lower annual recurring costs might provide a cheaper way to provide service in the long run. However, carriers would accrue no financial reward for taking the risk and making the investment in new technologies. The USF status quo assures a regular and predictable revenue flow with no risk and ample reward. In addition, the current USF system expects carriers to have stable or increasing recurring costs, even though new technologies offer the prospect of lower recurring costs.

The USF also creates disincentives for beneficiaries to consider innovative alternatives to paying incumbent carriers for existing services. For example, in specifying the types of services that qualify for subsidies, the USF regime emphasizes voice services to the detriment of data and Internet services and ensures that most money stays or flows exclusively into the coffers of

Telecommunications Carrier to serve the same locality.

⁴⁸ See, e.g., FCC Proposes Over \$2 Million in Forfeitures for Universal Service Fund and Other Regulatory Program Violations, (rel. July 25, 2005) (public notice), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260156A1.doc; Carrera Communications, LP, Notice of Apparent Liability for Forfeiture and Order, FCC 05-147 (rel. July 25, 2005), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-147A1.doc.

⁴⁹ See Ramsey L. Woodworth and Jared B. Weaver, *Camp Runamuck: The FCC's Troubled E-Rate Program*, 14 COMMLAW CONCEPTUS 335 (2006); Jonathan Meer, *Highway Robbery Online: Is E-Rate Worth The Fraud?* 2006 B.Y.U. EDUC. & L.J. 323 (2006).

incumbent carriers.⁵⁰ Even the e-rate system, which permits Internet access subsidies, precludes schools and libraries from erecting wireless networks that extend into a community, to aggregate requirements to qualify for higher capacity services from carriers at lower per unit costs, or to create alternative Internet networks such as those being developed by a consortium of universities.⁵¹

4) Emphasis on Service Subscriptions

Instead of promoting pure and applied research and development aimed at solving access problems, USF flows primarily to a small set of stakeholders who provide basic services and to constituencies receiving “tied aid” (i.e., funds tied to purchasing a narrow set of existing commercial services primarily from incumbents).⁵² Rather than promote a fair and transparent

⁵⁰ The FCC authorizes funding for Access to a telephone network with the ability to place and receive calls; Access to touch tone capability; Single-party service; Access to emergency systems including, where available, 911 and Enhanced 911; Access to operator services; Access to interexchange services; Access to directory assistance; and Limited long distance calling (for those low-income users who qualify). See National Telecommunications and Information Administration, *The New Universal Service: A User's Guide, Definition of Universal Service*, available at: <http://www.ntia.doc.gov/opadhome/uniserve/univweb.htm>.

⁵¹ Andy Oram, *Getting Universal Service to Work*, O'Reilly Developer Weblogs (July 21, 2004), available at: <http://www.oreillynet.com/pub/wlg/5217>. The FCC built assumptions based on existing, widespread models into its regulations, and thus required that new installations be ‘more of the same’; this benefited incumbent companies. In particular, regulations prevented the use of funds for the purchase of external lines or wireless equipment, which would have been a low-cost, long-term solution for many schools and libraries. Schools and libraries were not given practical goals, but simply instructed to spend as much of other people's money as they could. In other words, their goal was to spend the available money on easily obtainable equipment, not necessarily to make the best possible use of the money. They had no encouragement to be creative. The law provided only telecom equipment and networking services. It did not consider other useful things one could ask for to achieve Internet access. Such as computers, for instance. Or trained teachers and staff. *Id.*

⁵² Beginning in 2004, the FCC compiles an annual list of eligible services available for discounting under the e-rate program. “To be eligible for support, Telecommunications Services must be provided by an eligible telecommunications provider, that is, one who provides

business environment, the USF rewards administrative skills, such as mastering the e-rate system filing process, and emphasizes reliance on an incumbent carrier's voice network. With all the rhetoric about contestable, if not competitive markets in telecommunications, the USF system appears somewhat anachronistic in supporting the perception that only "one carrier of last resort" can operate with limited technological options in rural and high cost areas.

By emphasizing incumbent carriers' existing, basic services, the USF does nothing to stimulate efforts to achieve digital literacy (i.e., understanding how best to use telecommunications technologies as tools for enhancing learning, medical care and quality of life). It becomes all too easy for a school district or library to follow a tried and true strategy designed to extract the most funding available from the e-rate rather than to think strategically about how best to achieve goals for which technology constitutes one part of the solution. In light of the growing complexity in telecommunications and information processing technologies, USF beneficiaries might find it advantageous to develop at least some in-house expertise on how to use these technologies. The USF does not readily support training in the design, and management of networks, or in the effective use of the Internet.⁵³ Without such expertise, USF beneficiaries have every incentive to outsource projects and to take generic services with little if

Telecommunications on a common carriage basis." Release of Funding Year 2005 Eligible Services List For Schools and Libraries Universal Service Mechanism, (Oct. 14, 2004), 19 F.C.C.R 20,221, 20,222 (public notice).

⁵³ The FCC's expressly deems ineligible for e-rate funding "training in the use of the Internet" "costs for training provided via the Internet," "services that go beyond basic conduit access to the Internet," Federal Communications Commission, Public Notice, Pleading Cycle Established for Eligible Services List For Universal Service Mechanism For Schools And Libraries, CC Docket No. 02-06, FCC 06-109, at 12 (rel. July 21, 2006); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-109A1.pdf.

any customization that might better satisfy special requirements.⁵⁴

5) Potential for Substantial Future Deficits in USF Funding

Collectively, technological innovations, conflicting FCC regulatory objectives, and a recent Supreme Court case jeopardize the financial viability of the current USF regime. The migration from analog to digital networks makes it possible for voice services to become a possibly free software application that rides on the link provided by Internet access services such as DSL and cable modems.⁵⁵ Currently, VoIP and other services provide a relatively small volume of voice telephony traffic as compared to traditional, dial-up, circuit-switched telephone services offered by telecommunications service providers.⁵⁶ However, the very real potential

⁵⁴ See Heather E. Hudson, *Universal access: what have we learned from the E-rate?*, 28 TELECOM. POL'Y. 309 (2004) (noting the prohibition on schools and libraries from providing Internet access externally and reporting on a highly conditioned FCC waiver granted for Alaska, but not yet applied).

⁵⁵ See Rob Frieden, *Adjusting the Horizontal and Vertical in Telecommunications Regulation: A Comparison of the Traditional and a New Layered Approach*, 55 FED. COMM. L.J. 207-50 (Mar. 2003); Richard S. Whitt, *A Horizontal Leap Forward: Formulating A New Communications Public Policy Framework Based on the Network Layers Model*, 56 FED. COMM. L.J. 587 (May 2004); Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 FED. COMM. L.J. 561 (2000); Scott Marcus, *The Potential Relevance to the United States of the European Union's Newly Adopted Regulatory Framework for Telecommunications*, Federal Communications Commission, Office of Plans and Policy Working Paper Series No. 36 (July 2002), available at <http://www.fcc.gov/osp/workingp.html>; Douglas Sicker & Joshua L. Mindel, *Refinements of a Layered Model for Telecommunications Policy*, 1 J. ON TELECOM. & HIGH TECH. L. 69 (2002); Kevin Werbach, *A Layers Model for Internet Policy*, 1 J. ON TELECOM. & HIGH TECH. L. 37 (2002); John T. Nakahata, *Regulating Information Platforms: The Challenge of Rewriting Regulation From the Bottom Up*, 1 J. ON TELECOM. & HIGH TECH. L. 95 (2002); Phillip J. Weiser, *Law and Information Platforms*, 1 J. ON TELECOMM. & HIGH TECH. L. 1 (2002); Craig McTaggart, *A Layered Approach to Internet Legal Analysis* (Dec. 21, 2002), available at <http://www.innovationlaw.org/cm/ilg2002/reading/layered1.pdf>.

⁵⁶ See Cybertelecom, VoIP Statistics, available at: <http://www.cybertelecom.org/data/voip.htm>.

exists for packet switched, Internet Protocol networking to become the primary medium for most voice and data services. Should this occur, it follows that information services will constitute the primary retail, end user service provided by such networks.

Despite the fact that carriers providing information services do not trigger a USF contribution requirement, the FCC has several countervailing motivations to apply this classification to as many services as possible. The Commission has wisely decided that it should refrain from automatically applying legacy regulations for services that might operate in a competitive marketplace and which might incubate and develop more robustly without substantial government intrusion. However, instincts and incentives for deregulation or limited regulation may embolden the Commission to extend the information service classification down a slippery slope that includes some telecommunications services, including services the Commission previously declined to classify as information services.

II. Best Practices in Promoting Access to Basic and Advanced Services

Nations other than the United States consistently have proven that more progress in promoting information and communications technology (“ICT”) literacy, teledensity, and innovative uses can occur with less money, a smaller bureaucracy, and reduced marketplace distortion. The best practices share the following characteristics:

- True technology neutrality coupled with a willingness to fund well articulated and community-supported projects rather than limit support to a fixed list of existing carrier services;
- Capping government project funding to a percentage of total cost, thereby requiring project advocates to seek financial support from other grantors, or from bank loans;
- Creating incentives for demand aggregation among government and private users, particularly for broadband and data services;

- Emphasizing one-time project funding rather than recurring discounts;
- Promoting innovation and creativity in projects, including technologies that provide greater efficiency and lower recurring costs;
- Encouraging competition among universal service providers by auctioning off subsidy access; and
- Blending government stewardship and vision with incentives for private stakeholders to pursue infrastructure investments.

Successful universal service programming requires governments to do more than throw money at the problem. If governments have no effective role in promoting universal service then it might make sense to simply create a phone stamps program whereby qualified beneficiaries would receive direct subsidies that they could treat as cash when paying for telephone and Internet access services. If governments have no function other than to order redistribution of telecommunication revenues, then they should limit their roles as loan guarantors, as is the case in a parallel USF program administered by the Department of Agriculture.⁵⁷

Governments can provide constructive and desirable services such as technology incubator, steward, partial underwriter, and anchor tenant without operating as central manager of the information economy. Some governments have successfully promoted universal service and infrastructure development by developing a vision for what primarily market forces can achieve as augmented by limited and targeted governmental support.⁵⁸ Best practices in the broader goal of ICT development evidence a promotional role for government through partial

⁵⁷ See United States Department of Agriculture, Rural Utilities Service-Telecommunications Program, <http://www.usda.gov/rus/telecom/index.htm>. This program offers a straightforward means for reducing the cost of borrowed capital used for telecommunications development in rural areas.

⁵⁸ See, e.g., Rob Frieden, *Lessons from broadband development in Canada, Japan, Korea and the United States*, 29 TELECOM POL'Y. 595-613 (2005).

funding of specific projects, while primarily emphasizing private enterprise and facilities-based competition.

A) A Limited and Strategic Role for Government

Unlike the United States USF support structure, governments in other nations, such as Canada, Korea and Japan consider the need to blend efforts to develop skills in using ICT technology with financial support for procurement of ICT equipment and services. Rather than limit USF and ICT development funding to a closed and specific group of constituencies, these nations offer several types of financial support (e.g., loan guarantees, grants and tax credits) to any applicant that proposes effective, efficient, and innovative ways to stimulate ICT literacy and the provision of desirable services. Successful grant seekers know that they cannot simply tap into a gravy train to buy equipment and lease services without much thought as to which equipment and services will satisfy specific community requirements such as healthcare, education, access to information, and licensing.

Governments play a key role in developing safeguards to promote trust, security, privacy, and consumer protection in the access and use of ICT services – particularly e-commerce. These roles require government stewardship, not heavy handed, command and control, centralized management. Achieving improvements in these areas requires articulation of a cohesive “top-down” vision, as well as “bottom-up” projects proposed by community users who can aggregate the supply of services and the demand for ICT equipment and services. Best practices in ICT development do not rely exclusively or primarily on incumbent carriers to come up with innovative ways to serve a specific community’s needs. Rather than rely on a one size fits all inventory of qualifying USF services, best practices typically come from innovative uses of technology proposed by and for users.

Best practices do not occur when incumbents have few incentives to innovate or to deviate from the status quo. Likewise they do not occur when incumbents can leverage future investment in ICT infrastructure with a deregulatory or political agenda having little, if anything, to do with achieving the universal service mission. Governments can coordinate many possible funding strategies including direct underwriting, loans, favorable tax treatment, and financial support for research, development, and technology demonstration projects. Best practices also provide opportunities for residents to become both suppliers and consumers of ICT-mediated services.

B) Reshaping the Mission

In view of changing technologies and consumer expectations, the concepts of universal access and universal service remain in flux. The FCC should reexamine the concept of universal access, including how the Commission achieves the universal service mission articulated by the '96 Act. Moreover, the FCC must propose an alternative to the current funding mechanism for universal service, because the status quo cannot work in an Internet-centric operating environment where carriers offer subscription-based, unlimited interstate voice traffic that may avoid any USF burden.

As a threshold matter, the FCC should consider its universal service mandate in terms of four inter-related components:

- 1) **Infrastructure** - the scope and nature of networks that provide users with access to basic and advanced telecommunications and information services;
- 2) **Services** - a revised determination of what constitutes basic “life-line” services and which other services, including broadband, the FCC should include in an expanded universal service goal;

- 3) **Cost** - who should support universal service objectives and who could qualify for universal service subsidization of basic and advanced services; and
- 4) **Maintenance and Upgrades** - which incentives regulators must create to ensure that universal service providers maintain and upgrade their networks, but do not object to innovations, including user-operated telecommunications networks, that achieve scale, efficiency, and cost savings.

With these four components in mind, Congress, the FCC, USAC, subsidy contributors, and subsidy recipients must confront an acute, short term problem: the potential for Internet-mediate telephone services and the expanding wingspan of the USF exempt information service classification to trigger a severe decline in telecommunications service revenues subject to the USF burden. As an increasing amount of long distance traffic migrates to a USF exempt safe harbor, consumers of conventional services will incur an increasing USF burden, most notably the USF contribution factor that carriers pass onto their customers as a billing line item. Consumers of conventional long distance telephone service will quickly reach compassion fatigue when they realize that their USF contribution grows while other consumers of some VoIP services pay nothing. USF contribution avoidance strategies will become the latest regulatory arbitrage opportunity, even as the Commission should recognize the competitive harm and marketplace distortion that such arbitrage triggers.

In the near term, the FCC will have to confront the likelihood that a minutes of use USF contribution scheme will become unsustainable. In reforming the policies and rules applicable to access charges paid by one carrier for interconnection with another carrier, the Commission readily acknowledged the inequity and poor calibration with actual cost recovery resulting from use of a time-based charging mechanism.⁵⁹ The FCC has launched a multi-year campaign to

⁵⁹ See Access Charge Reform, 15 F.C.C.R. 12962 (May 31, 2000) (sixth report and order), *aff'd in part, rev'd in part, and remanded in part*, Texas Office of Public Util. Counsel v. FCC, 265 F.3d 313 (5th Cir. 2001), *cert. denied*, Nat'l Ass'n of State Util. Consumer Advocates v.

replace metered carrier access charges, particularly for recovering plant investment whose cost does not vary with usage.⁶⁰ The Commission acknowledged the economic inefficiency in using a metered cost recovery mechanism for non traffic sensitive plant investment that constitutes a large portion of a telephone company's sunk costs.⁶¹ In other words, much of a carrier's investment does not vary with how much traffic traverses the network. For example, the cost of installing the first and last few feet of copper wire that link a residence with the local loop has a significant cost, but not one that varies as a function of how many calls originate and terminate on that wire.

Similarly, much of the cost incurred by carriers to achieve improved broadband subscribership also does not vary with usage as compared to variables such as the number and density of subscribers and the average distance of the local loop linking a subscriber with carrier facilities.⁶² Accordingly, a minutes of use recovery system will overburden heavy users of interstate telecommunications services while recovering an insufficient contribution from light

FCC, 535 U.S. 986 (2002); Access Charge Reform, (July 10, 2003), 18 F.C.C.R. 14976 (order on remand); *see also* Cost Review Proceeding for Residential and Single-Line Business Subscriber Line Charge (SLC) Caps, 17 F.C.C.R. 10868 (order), *aff'd*, Nat'l Ass'n of State Util. Consumer Advocates v. FCC, 372 F.3d 454 (D.C. Cir. 2004).

⁶⁰ *See* Developing a Unified Inter-carrier Compensation Regime, (March 3, 2005), 20 F.C.C.R. 4685 (further notice of proposed rulemaking).

⁶¹ "Recovery of non-traffic sensitive costs through per-minute rates creates an implicit support flow from high- to low-volume users of interstate long distance service and is incompatible with a competitive market for local exchange and exchange access services." Section 257 Triennial Report to Congress, Identifying And Eliminating Market Entry Barriers For Entrepreneurs And Other Small Businesses, 19 F.C.C.R. 3034, 3104 (2004).

⁶² "The Commission has long recognized that, to the extent possible, interstate access costs should be recovered in the manner in which they are incurred. In particular, non-traffic-sensitive costs-costs that do not vary with the amount of traffic carried over the facilities-should be recovered through flat-rate charges, and traffic-sensitive costs should be recovered through per-minute charges." Access Charge Reform, Order on Remand, 18 F.C.C.R. 14,976, 14,977 (2003).

users whose local loop and network access still trigger the same carrier costs regardless of usage.⁶³

The FCC should replace the current minutes of use USF contribution regime and replace it with either general taxpayer underwriting, or a connection based system that applies to the physical links used to provide telephony and not the software applications that make voice telephony possible. A connection-based system uses a simple count of how many voice grade telephone service lines a service provider offers its customers regardless of medium and technology. It eliminates the potential for unfairness in a metered minutes of use calculation by determining a total USF subsidy burden and dividing that number by the total number of voice grade lines provided by wireline and wireless carriers, including ventures that access the conventional public switched telephone network, but also use the Internet for transmitting data packets. VoIP service providers would incur a USF subsidy obligation if, and only if, VoIP customers can reach the telephone numbers assigned to wireline and wireless subscribers through the networks of telecommunications service providers. If a VoIP service provider can offer telephone service solely through broadband connections, without accessing conventional wireline and wireless networks, then no USF contribution should be required. This dichotomy of USF responsibility respects the telecommunications/information service dichotomy by imposing financial subsidy obligations only on VoIP services that constitute a functional equivalent to

⁶³ Developing a Unified Intercarrier Compensation Regime, (Mar. 3, 2005), 20 F.C.C.R. 4685, 4785-86 (further notice of proposed rulemaking). [I]t does not appear that minutes-of-use are a significant determinant of costs given developments in telecommunications technologies. The Commission long ago recognized this with respect to loop costs, which are a function of subscriber density and choice of technology. For similar reasons, it appears that switching costs are primarily a function of the number of subscribers, rather than the number of calls or MOU, because a reduction in call minutes per subscriber would not substantially reduce the investment and operating cost of the switch serving those customers, at least in the case of wireline networks. *Id.*

telecommunications services, because they originate or terminate on telecommunications service networks.

Assuming the political unpopularity in adding over \$6.5 billion annually to the national budget, a reformed user-financed USF system appears more feasible. A connection based regime determines the number of lines that a retail customer can use to receive or deliver a voice-based telephone call and divides the cost of USF pro rata.⁶⁴ Any subscriber of a service that can originate or terminate a call from or to a telephone handset should contribute to USF funding. This burden should extend to ventures that require only call terminations such as wireless to wireline network calls and vice versa. Additionally, USF burdens should apply to any VoIP service that may originate via a DSL or cable modem and may transit the Internet, but which eventually routes through the conventional public switched telephone network to reach a conventional telephone handset.

This proposal may come across as controversial and as one that unlawfully extends the telecommunications service's regulatory burdens to information services. However, under Title I of the Communications Act, the FCC retains jurisdiction to subject information service providers to limited regulatory responsibilities that serve the public interest.⁶⁵ Arguably, shoring up the USF regime is a reasonable objective that serves the public interest.

⁶⁴ This type of proposal appears to have gained traction as FCC Chairman Martin recently endorsed it as lawful Section 251 of the '96 Act, easy to administer, technologically neutral, accessible to consumers, supportive of numbering resource conservation, and achievable without requiring new legislation. *See* Federal Communications Commission, *Remarks by Chairman Kevin J. Martin to the NARUC Summer Meeting* (July 26, 2005), available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260312A1.pdf.

⁶⁵ 47 U.S.C. § 151 *et seq.*

Another short-term strategy to achieve greater efficiency and cost saving in USF involves auctioning universal service subsidy access.⁶⁶ Rather than accept as a given the costs of an incumbent carrier operating in a high cost area, the FCC could auction access to USF to the carrier willing to provide service to a specific location with the least amount of subsidization. Currently, a telecommunications carrier can become eligible to receive USF regardless of whether this carrier can operate more efficiently through, for example, the use of a cheaper and more efficient wireless network instead of a conventional copper wireline network.⁶⁷ The FCC,⁶⁸ along with many economists,⁶⁹ tout the benefits of auctions for radio

⁶⁶ See Organization for Economic Co-operation and Development, DAC Network on Poverty Reduction, *Leveraging Telecommunications Policies for Pro-Growth Universal Access Funds with Minimum-Subsidy Auctions* (Oct. 22, 2004), available at: <http://www.oecd.org/dataoecd/57/56/33920168.pdf>.

⁶⁷ Section 214(e)(2) of the Communications Act of 1934, as amended, 47 U.S.C. §214(e)(2) authorizes a state public utility commission “upon its own motion or upon request designate a common carrier that meets the requirements of paragraph (1) as an eligible telecommunications carrier for a service area designated by the State commission. Upon request and consistent with the public interest, convenience, and necessity, the State commission may, in the case of an area served by a rural telephone company, and shall, in the case of all other areas, designate more than one common carrier as an eligible telecommunications carrier for a service area designated by the State commission, so long as each additional requesting carrier meets the requirements of paragraph (1). Before designating an additional eligible telecommunications carrier for an area served by a rural telephone company, the State commission shall find that the designation is in the public interest.” See Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Notice of Proposed Rulemaking, 19 F.C.C.R. 10,800 (2004).

⁶⁸ See, e.g., Implementation of Section 309(j) of the Communications Act - Competitive Bidding, (Apr. 20, 1994), 9 F.C.C.R. 2348 (second report and order); Implementation of Section 309(j) of the Communications Act - Competitive Bidding, (Aug. 15, 1994), 9 F.C.C.R. 7245 (second memorandum opinion and order); Implementation of Section 309(j) of the Communications Act - Competitive Bidding, (May 10, 1994), 9 F.C.C.R. 2941 (third report and order); Implementation of Section 309(j) of the Communications Act - Competitive Bidding, (May 10, 1994), 9 F.C.C.R. 2330 (fourth report); Implementation of Section 309(j) of the Communications Act - Competitive Bidding, (July 15, 1994), 9 F.C.C.R. 5532 (fifth report and order); Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Narrowband PCS, (Aug. 17, 1994), 10 F.C.C.R. 175 (third memorandum opinion and order and

further notice of proposed rule making); Revision of Rules and Policies for the Direct Broadcast Satellite Service, (Dec. 15, 1995), 11 F.C.C.R. 9712 (report and order); Amendment of Parts 2 and 90 of the Commission's Rules to provide for the Use of 200 Channels Outside the Designated Filing Area in the 896-901 MHz and the 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool, (Sept. 14, 1995), 11 F.C.C.R. 2639 (second order on reconsideration and seventh report and order); Rule Making To Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate the 29.5-30.0 GHz Frequency Band, To Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, (Mar. 13, 1997), 12 F.C.C.R. 12545 (second report and order, order on reconsideration and fifth notice of proposed rule making); Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, (Dec. 15, 1995), 11 F.C.C.R. 1463 (first report and order, eighth report and order, and second further notice of proposed rule making); Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, (Nov. 7, 1996), 11 F.C.C.R. 14769 (ninth report and order); Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, (Mar. 3, 1997), 12 F.C.C.R. 5754 (report and order, memorandum opinion and order, and further notice of proposed rule making); Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service, (Feb. 19, 1997), 12 F.C.C.R. 10785 (report and order); Amendment of Part 90 of the Commission's Rules To Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service, (1997), 12 F.C.C.R. 10943 (third report and order and fifth notice of proposed rule making); Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, (Oct. 6, 2003), 18 F.C.C.R. 20,604 (report and order and further notice of rulemaking); Dale N. Hatfield, *The Current Status of Spectrum Management*, in Robert M. Entman, Aspen Inst., *Balancing Policy Options in a Turbulent Telecommunications Market: A Report of the Seventeenth Annual Aspen Institute Conference on Telecommunications Policy* 29 (2003), available at <http://www.aspeninst.org>; see also Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (1993) (codified at 47 U.S.C. § 309 (2000)); see generally Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (1993) (codified at 47 U.S.C. § 309). This Act explicitly gives the FCC the authority to grant licenses "through a system of competitive bidding." 47 U.S.C. § 309(j)(1) (2006).

⁶⁹ See, e.g., Gregory L. Rosston & Jeffrey S. Steinberg, *Using Market-Based Spectrum Policy to Promote the Public Interest*, 50 FED. COMM. L.J. 87, 99-100 (1997); Thomas W. Hazlett, *The Law and Economics of Property Rights to Radio Spectrum*, 41 J.L. & ECON. 521 (1998); Peter Cramton, *The Efficiency of the FCC Spectrum Auctions*, 41 J.L. & ECON. 727, 727-36 (1998); Pablo T. Spiller & Carlo Cardilli, *Towards a Property Rights Approach to Communications Spectrum*, 16 YALE J. ON REG. 53, 82 (1999); D. Daniel Sokol, *The European Mobile 3g Umts Process: Lessons From the Spectrum Auctions And Beauty Contests*, 6 VA. J.L. & TECH. 17 (2001); Thomas W. Hazlett, *The Wireless Craze, The Unlimited Bandwidth Myth, The Spectrum Auction Faux Pas, and The Punchline To Ronald Coase's "Big Joke": An Essay on Airwave Allocation Policy*, 14 HARV. J.L. & TECH. 335, 405 (2001).

spectrum licenses and even satellite orbital slots.⁷⁰ The privilege of tapping into USF constitutes a franchise of sorts that multiple ventures might have an interest in securing, especially for exurban areas that may eventually become more densely populated and profitably served.

C) Longer Term Challenges and Remedies

At some point not too far into the future, information, communications, and entertainment (“ICE”) technologies and markets will converge with the Internet, serving as a central medium for access and delivery. In such an Internet-centric environment, most voice services will become available with the launch of software. The concept of dedicated, identifiable voice network links will become an artifact of the past as efficient bit transport handles a variety of converging voice, audio, data, and video services. An Internet-centric, ICE environment will make it impossible to fund universal service programs based on interstate telecommunications minutes of use.

The FCC’s conceptualization of telephone service and voice telephony also will have to change. People will continue to make telephone calls, but such calls will constitute but one feature of a rich and diverse array of services available via broadband networks. Accordingly, the FCC will need to devise a new and viable USF regime, despite the likelihood that carriers may not have the technical capability of metering their customers’ long distance telephone minutes of use. Similarly, because broadband networks will have become the predominant medium for access and delivery of all ICE services, the FCC must consider universal service to include broadband packet delivery and not just voice services for residences.

The expansion of the USF mission to include broadband will present even greater financial challenges, but it also will force decision makers to create a more effective and versatile

⁷⁰ See Rob Frieden, *Balancing Equity and Efficiency Issues in the Management of Shared Global Radiocommunication Resources*, 24 U. PA. J. INT’L ECON. L. 289-327 (2003).

USF mechanism. To facilitate this broader and more diversified sense of the universal service mission, the FCC should afford constituencies the opportunity to apply for and receive financial grants to pursue stand alone telecommunications and information processing projects in addition to or in lieu of discounted carrier services. A grant-seeking process, such as the one administered in Canada, to stimulate rural access to telecommunications and information processing services,⁷¹ allows constituencies to aggregate demand, link geographically separate users, and provide services otherwise unavailable from commercial ventures. Canada and other nations have offered grants to community-based groups that deliver a variety of telecommunications and information processing services to many different users, making it possible for “smart communities” in remote areas to have access to advanced services one would expect to be available exclusively in cities. The Canadian government favors a bottom-up “community aggregator model” where government funding of programs and the delivery of electronic government services help stimulate the generation of sufficient demand to use existing network capacity and stimulate the construction of new facilities.

Incumbent carriers, as historically guaranteed beneficiaries of USF, would likely oppose any expanded opportunities for universal service end user beneficiaries to secure funding for network construction and possible self-provisioning of some telecommunications services. In several states and municipalities, carriers have objected to community-based efforts to install and operate wireless data networks.⁷² Some state governments have enacted laws that prohibit such

⁷¹ For background on Canada’s broadband initiatives see <http://www.broadband.gc.ca/pub/media/index.html>; International Telecommunication Union, Workshop on Promoting Broadband, *Promoting Broadband: The Case of Canada*, Document PB/05 (Apr. 2003), available at: <http://www.itu.int/osg/spu/ni/promotebroadband/casestudies/canada.pdf>.

⁷² Michael Rubinkam, *Philadelphia to be blanketed by Wi-Fi hotspots by 2006*,

community initiatives, or at least offer carriers the right of first refusal before allowing taxpayer financing.⁷³

One can appreciate carriers' opposition to taxpayer underwriting of telecommunications and information processing network as foreclosing private enterprise and risking substantial funds on a venture that may prove unsustainable and an undertaking for which community groups and governments might lack expertise in managing. However, USF operates in an environment where marketplace forces will not achieve the kind of service availability, subscribership, and prices elected government officials believe would be optimal. If a community government or coalition of users seek to operate a telecommunications or information processing network, it is possible that no incumbent carrier could or would provide what the community appears to want.⁷⁴ The universal service objectives contemplated by

U.S.A. TODAY, Jan., 19, 2005, available at: http://www.usatoday.com/tech/wireless/data/2005-01-19-philly-hotcloud_x.htm; James Dao, *Philadelphia Hopes for a Wireless Lead*, N.Y. TIMES, Feb. 17, 2005, at A18; Lawrence Lessig, *Why Your Broadband Sucks*, 13 WIRED 3 (Mar. 2005), available at: <http://www.wired.com/wired/archive/13.03/view.html?pg=5>.

⁷³ See, e.g., General Assembly of Pennsylvania, House Bill No. 30, An Act further providing for residential telephone service rates based on duration or distance of call and for local exchange service increases and limitations. The bill was signed in the House and in the Senate on November 19, 2004 and approved by the Governor on November, 30, 2004. The text of law is available at <http://www.legis.state.pa.us/WU01/LI/BI/BT/2003/0/HB0030P4778.HTM>.

⁷⁴ Harold Feld, Gregory Rose, Mark Cooper, & Ben Scott, *Connecting the Public: The Truth About Municipal Broadband* (Apr. 2005), available at: http://www.mediaaccess.org/MunicipalBroadband_WhitePaper.pdf; Public Knowledge, *Principles for an Open Broadband Future* (July 6, 2005), available at: <http://www.publicknowledge.org/content/papers/open-broadband-future>. Cf. Adam Thierer, *Risky Business: Philadelphia's Plan for Providing Wi-Fi Service*, The Progress and Freedom Foundation, Progress on Point, Release 12.4 (Apr. 2005), available at: <http://www.publicknowledge.org/content/papers/open-broadband-future>, and Thomas M. Lenard, *Wireless Philadelphia: A Leap into the Unknown*, The Progress and Freedom Foundation, Progress on Point, Release 12.3 (Apr. 2005), available at: <http://www.pff.org/issues-pubs/pops/pop12.3lenardwifi.pdf>; New Millennium Research Council, 'Not in the public interest'—*The Myth of Municipal Wi-Fi Networks* (Feb. 2005), available at:

Congress are served when a coalition of schools, libraries, government agencies and rural clinics propose to aggregate demand for facilities and services, and to achieve operational efficiencies by accessing their own quasi-public network rather than individually leasing lower capacity lines at a higher cost per unit.

III. Conclusion

Technological innovations, declining USF revenue sources, telephone consumer compassion fatigue, and changes in what a universal mission should support, combine to make the current regime unsustainable. Internet mediation of telephone calls threatens the status quo by eliminating the distinction between local and long distance telephony and between voice and data services. Declining conventional dial-up long distance telephone service revenues reduce the primary USF subsidy source thereby requiring an ever increasing contribution factor. An increasing number of consumers have become irritated by the USF contribution line item on their bills. VoIP provides consumers the opportunity to reduce or avoid USF contributions and to lower their long distance telephone calling costs.

The universal service funding mechanism must change and in doing so, the FCC has an opportunity to ensure its financial viability, achieve operational efficiencies and recalibrate the subsidy process while also expanding the universal service mission to include promoting broadband access in rural and high cost areas. Technological innovations increase the scope and diversity of what the telecommunications infrastructure can provide, thereby raising the financial and social stakes when not everyone has the same access opportunities.

This paper has recommended that the USF avoid making massive transfers of money between user groups by emphasizing ad hoc, project-specific funding designed to serve

community-based telecommunications and information processing requirements. The paper has also recommended a connection-based funding mechanism that spreads the financial burden over all carriers and consumers who benefit from access to networks that support voice services to telephones. Further, the paper has suggested that carriers should compete for the privilege of tapping into USF subsidies in lieu of nearly automatic eligibility.

If Congress and the FCC act on these recommendations, the universal service mission can achieve greater success with less money and without harming carriers. Fundamentally USF should flow directly to users and proponents of cost effective projects, rather than annually pay carriers on a recurring basis. Having paid nearly \$50 billion dollars in USF support just in the years from 1998 to 2005,⁷⁵ telecommunications consumers deserve more for such a sizeable investment.

⁷⁵ Universal Service Administrative Company, Universal Service Fund Facts, available at: <http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx>.